We claim:

1. A process for distillatively working up an aqueous composition which comprises 1,1,2,2-tetramethoxyethane, glyoxal dimethyl acetal and methanol, wherein the composition is worked up to form at least one low boiler fraction, at least one medium boiler fraction and at least one high boiler fraction in a dividing wall column in which a dividing wall is arranged in the longitudinal direction of the column to form an upper common column region, a lower common column region, a feed section having rectifying section and stripping section and a withdrawal section having rectifying section and stripping section, the dividing wall is arranged between the upper and the lower common column region and the aqueous composition is fed to the middle region of the feed section, and at least one medium boiler fraction comprising aqueous 1,1,2,2-tetramethoxyethane is obtained as a sidestream from the middle region of the withdrawal section, at least one high boiler fraction comprising glyoxal dimethyl acetal from the lower common column region and at least one low boiler fraction comprising methanol from the upper common column region.

2. A process as claimed in claim 1, wherein

   - the upper common subregion has from 5 to 50% of the total number of theoretical plates of the dividing wall column,
   - the rectifying section of the feed section has from 5 to 50% of the total number of theoretical plates of the dividing wall column,
   - the stripping section of the feed section has from 5 to 50% of the total number of theoretical plates of the dividing wall column,
   - the stripping section of the withdrawal section has from 5 to 50% of the total number of theoretical plates of the dividing wall column,
   - the rectifying section of the withdrawal section has from 5 to 50% of the total number of theoretical plates of the dividing wall column, and
   - the lower common section has from 5 to 50% of the total number of theoretical plates of the dividing wall column,

   the total number of theoretical dividing wall plates of the dividing wall column being 100%.

3. A process as claimed in claim 1 or 2, wherein at least one high boiler fraction is obtained as a liquid sidestream in the lower section of the column from 1 to 5 theoretical plates above the column bottom and comprises glyoxal dimethyl acetal.

4. A process as claimed in any of claims 1 to 3, wherein glyoxal dimethyl acetal is isolated from at least one high boiler takeoff of the dividing wall column.

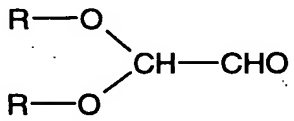
5. A process as claimed in any of claims 1 to 4, wherein the medium boiler fraction is withdrawn in liquid or gaseous form at the sidestream takeoff point and comprises 1,1,2,2-tetramethoxyethane.

6. A process as claimed in any of claims 1 to 5, wherein the aqueous composition has one or more of the following contents whose sum does not exceed 100% by weight:

- from 8 to 28% by weight of 1,1,2,2-tetramethoxyethane
- from 2 to 12% by weight of glyoxal dimethyl acetal
- from 40 to 80% by weight of methanol
- from 5 to 18% by weight of water.

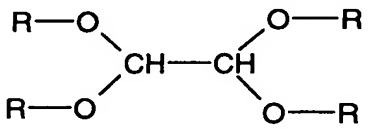
7. A process as claimed in any of claims 1 to 6, wherein the aqueous composition is obtained by reacting from 40 to 75% by weight aqueous glyoxal with methanol in the presence of an acidic catalyst, by leaving a liquid mixture which, at the start of the reaction, contains methanol and glyoxal in a molar ratio of at least 15 : 1 and water in a concentration of not more than 8% by weight in contact with the acidic catalyst until the concentration of the 1,1,2,2-tetramethoxyethane formed in the reaction mixture has reached at least 70% of the equilibrium concentration without more than 5% by weight of the methanol having been distilled off beforehand.

8. A process as claimed in any of claims 1 to 6, wherein the aqueous composition is obtained in the preparation of glyoxal monoacetals of the general formula (I)



(I),

by, in the process, reacting a mixture of from 20 to 60% by weight of aqueous glyoxal and glyoxal bisacetals of the general formula (II),



(II)

in the presence of an acidic catalyst with an excess of a monohydric alcohol ROH until the reaction equilibrium has been attained.

9. A process as claimed in any of claims 1 to 8, wherein the liquid or gaseous aqueous side effluent of the dividing wall column or of the second thermally coupled column, which contains most of the 1,1,2,2-tetramethoxyethane, is fed into a further column which is equipped with trays, structural packings or random packings and in which the water is removed with the aid of an azeotroping agent distillation.

10. A process as claimed in claim 9, wherein the 1,1,2,2-tetramethoxyethane is at least partly obtained as a liquid or gaseous sidestream in the lower section of the column, preferably from 1 to 5 theoretical plates above the column bottom, and/or the bottom takeoff of this column is fed into the feed point of the dividing wall column.

11. A process for distillatively working up an aqueous composition which comprises 1,1,2,2-tetramethoxyethane, glyoxal dimethyl acetal and methanol, which comprises carrying out the workup of the composition according to the process as defined in claims 1 to 10 in a combination of two distillation columns in the form of a thermal coupling, which corresponds to the deviding wall column.

12. The use of dividing wall columns for distillatively working up an aqueous composition which comprises 1,1,2,2-tetramethoxyethane, glyoxal dimethyl acetal and methanol.